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Landhoppers (Amphipoda, Talitridae) of the genus *Orchestia* of the Canary Islands

by Jan H. Stock

Abstract. — *Orchestia canariensis* Dahl, 1950 (an endemic of Gran Canaria) is re-described, and *O. gomeri* n. sp. (an endemic of La Gomera) is described. They are compared with the closely related *O. chevreuxi* de Guerne, 1887 (an endemic of the Azores), and with *O. guancha* Stock & Boxshall, 1989 (an endemic of Tenerife). The record of *O. chevreuxi* from Fuerteventura by Chevreux (1900) supports on a erroneous identification of *O. gammarellus* (Pallas, 1766).

Résumé. — *Orchestia canariensis* Dahl, 1950 (endémique de Gran Canaria) est redécrite, et *O. gomeri* n. sp. (endémique de La Gomera) décrite. Elles sont comparées à l'espèce étroitement apparentée, *O. chevreuxi* de Guerne, 1887 (endémique des Açores), et à *O. guancha* Stock & Boxshall, 1989 (endémique de Ténérife). La présence d'*O. chevreuxi* à Fuerteventura, signalée par Chevreux (1900), repose sur une identification erronée d'*O. gammarellus* (Pallas, 1766).

J. H. Stock, *Institute of Taxonomic Zoology, University of Amsterdam, P.O. Box 4766, 1009 AT Amsterdam, Netherlands.*

Introduction

Terrestrial Amphipoda of the Canary Islands have been subject of several previous studies (Chevreux, 1888, 1900 ; Dahl, 1950, 1967 ; Andersson, 1962 ; Stock & Martin, 1988 ; Stock & Boxshall, 1989). If we exclude the halophilous forms (the so-called beachfleas), of which several species are knoxn from the Canary Islands [*Orchestia gammarellus* (Pallas, 1766), *O. mediterranea* Costa, 1857, *Platorchestia platensis* (Kröyer, 1845), *Talitrus saltator* (Montagu, 1808)], there remain several species which are confined to the interior of the islands (landhoppers), often at considerable altitude (150-2000 m). Three genera of landhoppers are recorded from the Canarias : *Orchestia* Leach, 1814, *Talitroides* Bonnier, 1898, and *Palmorchestia* Stock & Martin, 1988. Of *Talitroides*, two species have been introduced accidentally from the Indo-Pacific region : *T. topitotum* (Burt, 1934) [= *T. pacificus* (Hurley, 1955)], and *T. alluaudi* (Chevreux, 1896), both mainly restricted to cultivated areas at lower altitudes. *Palmorchestia* is a genus with two species, endemic to the island of La Palma. Up to very recently, only two landhoppers of the genus *Orchestia* were recorded : *O. canariensis* Dahl, 1950, from Gran Canaria, and *O. chevreuxi* de Guerne, 1877. Stock & Boxshall (1989) showed that material identified as *O. chevreuxi* from Tenerife is not identical with topotypical *O. chevreuxi* from the island of Faial in the Azores. They proposed the name *O. guancha* for the taxon from Tenerife.

CHEVREUX (1900 : 4) lists "*O. chevreuxi*" not only from Tenerife, but also from Gran Canaria, Fuerteventura, and La Palma. Thanks to the courtesy of Dr. J. FOREST (Muséum national d'Histoire naturelle, Paris), we were enabled to re-examine several of CHEVREUX's samples. The comparison of this material, with recently collected samples from Tenerife, La Gomera, La Palma, and Gran Canaria, showed that none of the specimens belonged to the real *O. chevreuxi*. CHEVREUX's material from Fuerteventura consists of *O. gammarellus*, that from Gran Canaria of *O. canariensis*. The specimens from La Palma belong to the genus *Palmorchestia*. Finally, the form from La Gomera proved to be a new species, described in this paper.

The samples recorded in this paper are preserved in the Muséum national d'Histoire naturelle, Paris (MNHN), and in the Zoölogisch Museum, Amsterdam (ZMA).

Orchestia canariensis Dahl, 1950

(Figs 1-2)

O. canariensis Dahl, 1950 : 195-198, figs. 1-8; ANDERSSON, 1962 : 217.
O. chevreuxi; CHEVREUX, 1900 (*non* DE GUERNE, 1887) : 4 (Gran Canaria records only).

MATERIAL (all from Gran Canaria). — 16 specimens, "Melita" Stn. 281, Barranco de los Laureles, alt. 500 m, 8 Jan. 1890 (Muséum national d'Histoire naturelle, Paris, MNHN Am 4370). [We were not able to retrace a locality with exactly the same orthography. Most probably the material was collected in the Barranco del Laurel. SW of Firgas, ca. 28°04'30" N-15°37' W]. — 2 specimens, Pinar d'Agaëte, alt. 1000 m, 3 Jan. 1890 (MNHN Am 4371). — 3 specimens, Gran Canaria, no details, no date, alt. 1000 m (MNHN Am 4373). — 1 specimen, canales de Temisas, alt. ca. 800 m, 30 March 1989 (Zoölogisch Amsterdam, ZMA Amph. 108.603).

DESCRIPTION

Adult ♂ 15.5 mm, ovigerous ♀ (12 eggs) 11.5 mm. Eye (in preserved state) not strongly pigmented, light brown, circular (fig. 1a). Live specimen greenish.

Antenna 1 reaching to end of peduncle segment 4 of antenna 2; flagellum 6-segmented, similar to that of *O. gomeri* n. sp. Antenna 2 (fig. 1b) : Peduncle of ♀ slightly weaker than that of ♂; flagellum 20-segmented.

Left lacinia mobilis 4-dentate.

Maxilliped : Inner lobe distally with 3 short, triangular spines. Palp segment 2 with mediodistal lobe; segment 4 small but not fused with segment 3.

Gnathopod 1 (fig. 1c, g) : Coxal plate (♂,♀) less triangular than DAHL's fig. 1 suggests. Basis (♂, ♀) without proximo-anterior row of bristles on medial surface. Carpus of ♂ with strong posterior swelling, of rounded-triangular shape, proximal margin longer than distal margin; that of ♀ not strongly swollen (DAHL's figures 1 and 7 do not quite do justice to the shape of the carpus of both sexes). Propodus of ♂ (fig. 1d) with distally dilated posterior margin; claw shorter than palm; palmar margin convex; propodus of ♀ (fig. 1h) almost rectangular; palmar margin concave; claw longer than palm.

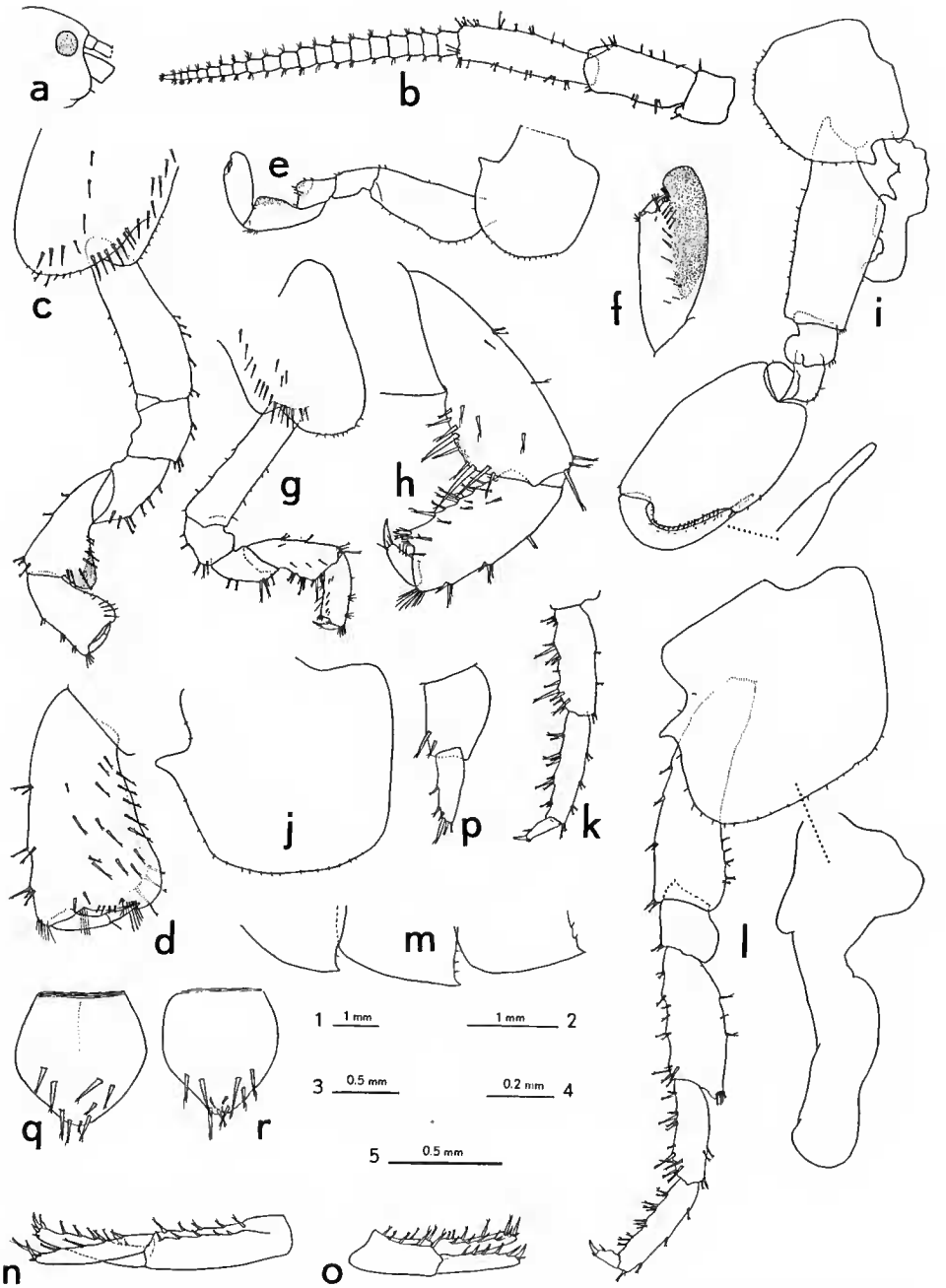

FIG. 1. — *Orchestia canariensis* Dahl, 1950, from Barranco de los Laureles, Gran Canaria. a, head, ♂ (scale 1); b, antenna 2, ♂ (2); c, gnathopod 1 ♂ (3); d, propodus of gnathopod 1, ♂ (4); e, gnathopod 2, ♀ (2); f, propodus of gnathopod 2, ♀ (5); g, gnathopod 1, ♀ (3); h, carpus and propodus of gnathopod 1, ♀ (4); i, gnathopod 2, ♂ (2); j, coxal plate 3, ♂ (3); k, distal segments of pereiopod 3, ♂ (3); l, pereiopod 4, ♂ (3); m, epimeral plates 1 to 3, ♂ (3); n, uropod 1, ♂ (2); o, uropod 2, ♂ (2); p, uropod 3, ♂ (5); q, telson, ♂ (5); r, telson, ♀ (5).

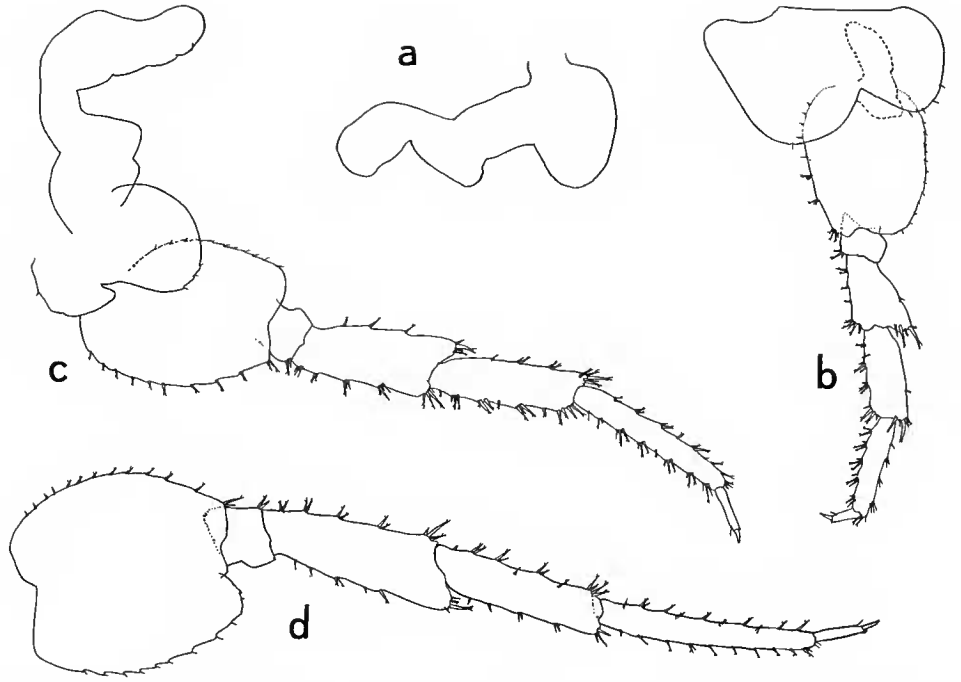

FIG. 2. — *Orchestia canariensis* Dahl, 1950, ♂, from Barranco de los Laureles, Gran Canaria. a, coxal gill of pereionite 3 (scale 5); b, pereiopod 5 (2); c, pereiopod 6 (2); d, pereiopod 7 (2).

Gnathopod 2 (fig. 1e, i) : Coxal plate (♂, ♀) of normal shape (posterior pointed projection not very large, posteroproximal emargination almost rectangular), illustrated incorrectly in DAHL's fig. 2. Coxal gill (♂, ♀) ribbon-shaped, reaching far beyond middle of basis. Posterior margin of basis (♂) with angular bent. Anterior margin of basis (♀) with modest, rounded swelling. Ischium of ♂ markedly L-shaped. Meral expansion of ♀ stronger than that of ♂. Carpus of ♀ long, with modest posterior lobe; carpus of ♂ very small. Propodal palm (♂) with shallow notch near tip of finger, and strong sinus near base of finger. Tip of finger (♂) obtuse, distal part distinctly narrower than rest of finger. Propodus of ♀ (fig. 1f) mitten-shaped, distal lobe overreaching finger.

Pereiopod 3 (♂, ♀) : Coxal plate slightly deeper than wide; posterior pointed projection well-developed, postero-proximal emargination more or less rectangular (fig. 1j). Coxal gill ribbon-shaped, lobate, reaching almost to end of basis (fig. 2a). Merus as long as propodus. Claw not "pinched", cuspidactylate (fig. 1k).

Pereiopod 4 (♂, ♀) (fig. 1l) : Coxal plate wider than plate 3; posterior point and emargination as in plate 3. Coxal gill overreaching basis. Merus slightly shorter than propodus. Claw "pinched".

Pereiopod 5 (fig. 2b) without sexual dimorphism, shorter than P6. Coxal gill small; coxal plate anterolobate, large. Merus very short, distally strongly widened. Claw short.

Pereiopod 6 (fig. 2c) without sexual dimorphism, shorter than P7. Coxal gill large, coxal

plate postero-lobate, small. Propodus slender, with ca. 8 groups of spines on anterior margin. Claw very thin and slender.

Pereiopod 7 (fig. 2d) : Coxal plate almost non-lobate. No coxal gill. No sexual dimorphism. Basis with somewhat overhanging postero-ventral lobe. Propodus slender, with ca. 10 (groups of) spines on anterior margin. Claw as in P6.

Epimeral plates (fig. 1m) with pointed postero-ventral corner; posterior margin with several setules, that of plate 3 serrate; ventral margin unarmed.

Pleopods : Peduncle unarmed, as long as endopodite; endopodite slightly longer than exopodite; both rami 10-segmented.

Uropod 1 (fig. 1n) : Exopodite with fewer dorsal spines (4-6) than endopodite (6-7). No interramal spine.

Uropod 2 (fig. 1o) : Peduncle and rami with several spines.

Uropod 3 (fig. 1p) : Peduncle as long as ramus, with 2 distal spines. Ramus with 2 or 3 dorsal spines and 3 or 4 distal spines.

Telson (fig. 1q, r) as long as wide, not cleft or with very shallow cleft; distal half with 3 to 6 dorsal spines; distal margin with 3 to 5 spines.

Remarks

This species is closely related to the landhopper of the Azores, *Orchestia chevreuxi* de Guerne, 1887. *O. canariensis* agrees with *O. chevreuxi* in the absence of a row of bristles in the proximal part of the basis of gnathopod 1 (♂, ♀), in the drawn out, obtuse claw of gnathopod 2 (♂), in the contour of the proximal part of the palmar margin of gnathopod 2 (♂), etc.

Differences with *O. chevreuxi* are found in the carpus and propodus of pereiopods 6 and 7 (more elongate and with more groups of spines in *chevr.*), coxal gill of pereiopod 6 (much smaller in *chevr.*), the slightly smaller lobe of the basis of pereiopod 7 of *chevr.*, the less clearly L-shaped ischium of gnathopod 2 (♂) in *chevr.*, and the less pronounced palmar sinus at the basis of the claw in gnathopod 2 (♂) of *chevr.*

Orchestia gomeri n. sp.

(Figs. 3-4)

Material (all from La Gomera, Canary Islands). — 1 ♂ holotype, 1 ♀ ovig. allotype, 25 paratypes. Parque Nacional del Garajonay, Barranco El Carmen, alt. ca. 800 m, 21 Apr. 1987. (Holotype, allotype and 21 paratypes ZMA Amph. 108.607; 4 paratypes MNHN Am. 4375). — 5 paratypes, Parque Nacional del Garajonay, above Ermita de N.D. de Guadeloupe, alt. ca. 1000 m, 22 Apr. 1987 (ZMA Amph. 108.608). — In both localities, the animals were found in very humid conditions (banks of a spring and of a stream).

Description

Body length of ♂ and ovigerous ♀ (7 eggs) 14 mm. Colour : dark greenish. Eye black, round (fig. 3a).

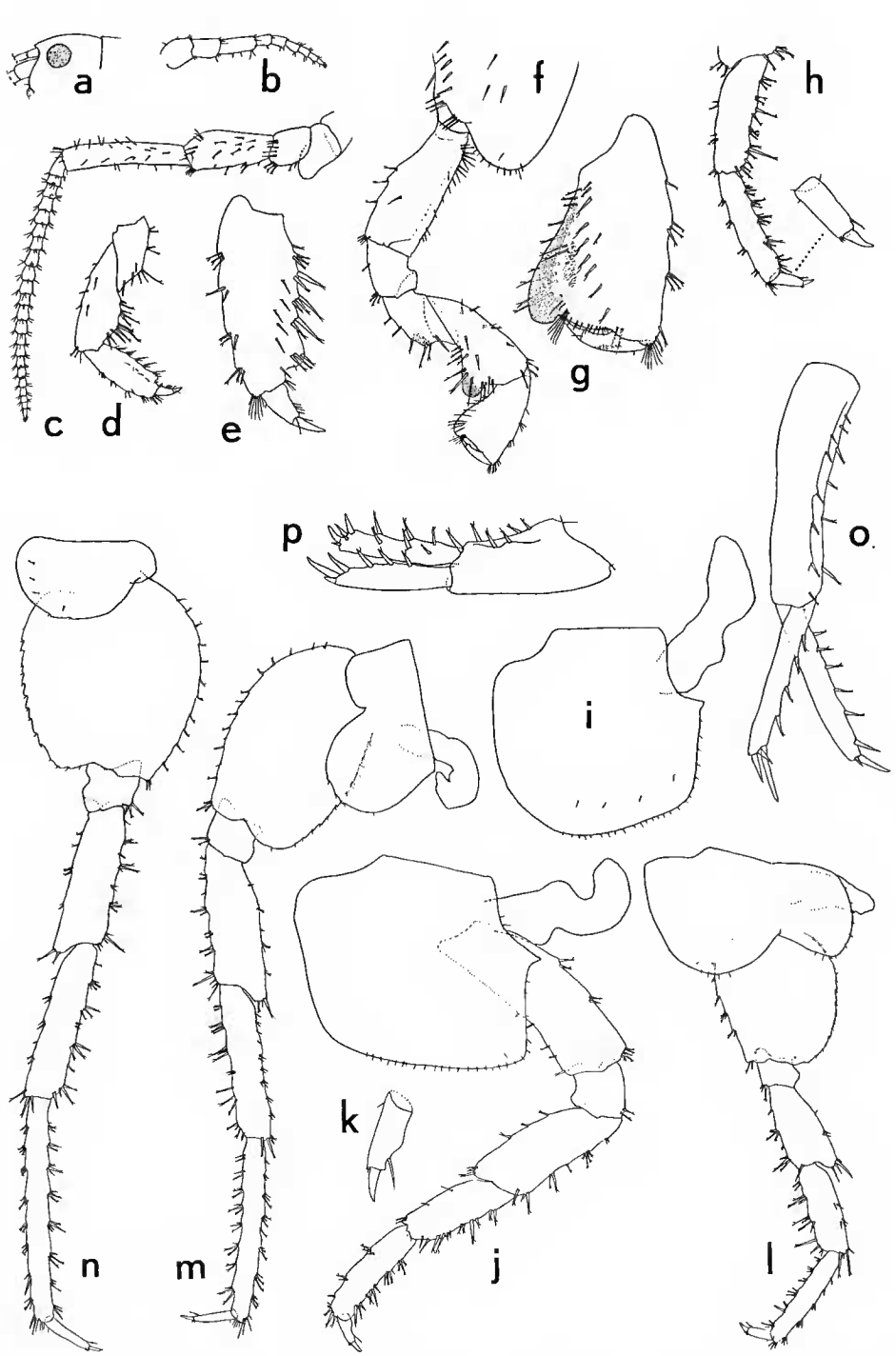

FIG. 3. — *Orchestia gomeri* n. sp., paratypes. a, head, ♀ (scale 1); b, antenna 1, ♂ (2); c, antenna 2, ♂ (2); d, gnathopod 1, ♀ (3); e, propodus of gnathopod 1, ♀ (4); f, gnathopod 1, ♂ (3); g, propodus of gnathopod 1, ♂ (4); h, pereiopod 3, ♂ (3); i, coxal plate 3, ♂ (4); j, pereiopod 4, ♂ (3); k, claw of pereiopod 4, ♂ (4); l, pereiopod 5, ♂ (2); m, pereiopod 6, ♂ (2); n, pereiopod 7, ♂ (2); o, uropod 1, ♂ (3); p. uropod 2, ♂ (3).

Antenna 1 (fig. 3b) reaching slightly beyond distal end of peduncle segment 4 of antenna 2. Peduncle segment 3 longest. Flagellum 6-segmented.

Antenna 2 (fig. 3c) without conspicuous sexual dimorphism. Flagellum of adults 18- to 22-segmented.

Mandibular left lacinia mobilis 4-dentate.

Distal margin of inner lobe of maxilliped with 3 short, triangular spines. Palp segment 2 with median lobe; palp segment 4 small but not fused with segment 3.

Gnathopod 1 of ♂ (fig. 3f, g) : Shape of coxal plate as in related species. Basis with row of bristles in proximal part, on anterior side of medial surface. Carpus and propodus similar to those of *O. canariensis*.

Gnathopod 1 of ♀ (fig. 3d, e) : Coxal plate and basis as in ♂. Posterior margin of carpus convex but not clearly lobate. Posterior margin of propodus strongly spinous; palm strongly concave; claw longer than palm.

Gnathopod 2 of ♂ (fig. 4a) : Coxal plate with inconspicuous posterior projection; proximoposterior emargination regularly convex (not angular as in *O. canariensis*). Coxal gill slightly smaller than in *O. canariensis*. Posterior margin of basis gently curved (not angular). Ischium of "normal" shape, not so markedly L-shaped as in *O. canariensis*. Palm of propodus gently curved; proximal notch (near tip of claw) hardly indicated; distal sinus (near implantation of claw) practically absent. Claw drawn out into narrow, obtuse tip, as in *O. canariensis*.

Gnathopod 2 of ♀ (fig. 4b) : Coxal plate as in ♂. Anterior side of basis swollen. Carpus and propodus resembling those of *O. canariensis*. Oostegite elongate-ovate, reaching to middle of merus, marginal armature of ca. 25 straight setae.

Pereiopod 3 (♂, ♀) (fig, 3h, i) : Coxal plate as deep as wide, with small posterior point and regularly curved emargination. Coxal gill much shorter than basis. Merus as long as propodus. Claw not pinched.

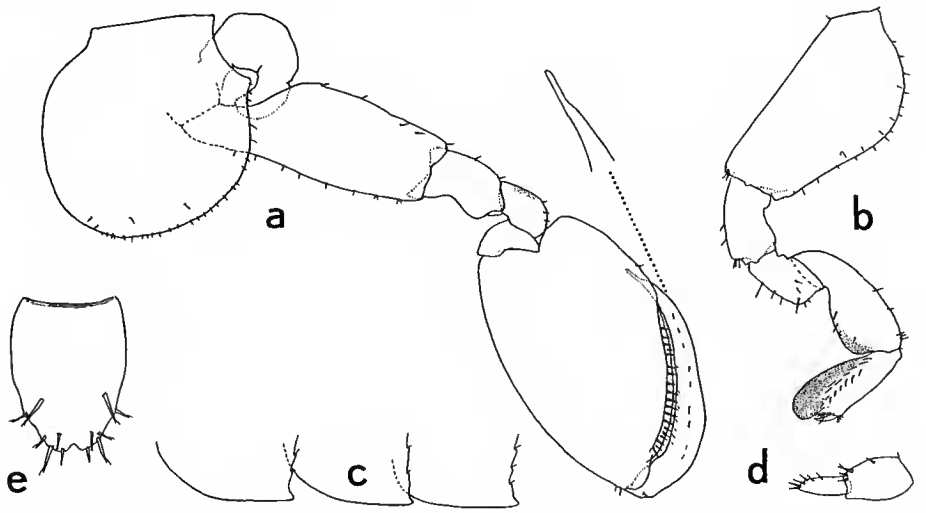

FIG. 4. — *Orchestia gomeri* n. sp., paratypes. a, gnathopod 2, ♂ (scale 3); b, gnathopod 2, ♀ (3); c, epimeral plates 1 to 3, ♂ (2); d, uropod 3, ♂ (3); e, telson, ♀ (5).

Pereiopod 4 (♂, ♀) (fig. 3j, k) : Coxal plate wider than deep, posterior point small, sharp; proximoposterior emargination shallow, regularly convex (not angular). Coxal gill shorter than basis, much smaller than in *O. canariensis*. Merus shorter than propodus. Claw slightly "pinched".

Pereiopods 5 to 7 without sexual dimorphism; P5 (fig. 3l) much shorter than P6 (fig. 3m); P6 slightly shorter than P7 (fig. 3n). Coxal gill of P5 small, as in *O. canariensis*, that of P6 much smaller than in *O. canariensis*. Merus of P5 more elongate and less widened than in *O. canariensis*. Posteroventral lobe of basis of P7 less overhanging than in *O. canariensis*. Propodus of P6 and P7 elongate, anterior margin with ca. 8 groups of spines. Claw of P6 and P7 slender, as in *O. canariensis*.

Epimeral plates (fig. 4c) with small posterior tooth; posterior margin slightly serrate, with minute setules.

Pleopods : Peduncle unarmed, slightly longer then rami; rami 8- to 9-segmented.

Uropods (figs. 3o, p; 4d) resembling those of *O. canariensis*.

Telson (fig. 4e) longer than wide; disto-medial notch wide, but not deep; armed with 2 pairs of dorsal spines, a variable number of distal spines (3 to 4 per telson half) and no or 1 disto-lateral spine.

ETYMOLOGY. — The island of La Gomera, and the new species, derive their name from Genesis X, 2 (Gomer, son of Japhet, grandson of Noah).

REMARKS

The new species is closely related to the other terrestrial *Orchestia* species from Macaronesia : *O. chevreuxi* de Guerne, 1887 (Azores), *O. guancha* Stock & Boxshall, 1989 (Tenerife), and *O. canariensis* Dahl, 1950 (Gran Canaria).

In the absence of a strong palmar notch near the tip of the claw of gnathopod 2 (♂), in the distal narrowing of the obtuse claw of the same appendage, and in the richly spinous propodus of pereiopod 7 (♂, ♀), it agrees with *O. canariensis* and *O. chevreuxi*. In the presence of a row of bristles in the proximal part of the basis of gnathopod 1 (♂, ♀) it corresponds with *O. guancha*.

Other differences with *O. canariensis* are enumerated in the above description (small size of posterior tooth on coxal plates 2 to 4; shallow, rounded postero-proximal emargination of same coxal plates; merus of pereiopod 5 not strongly widened; telson more elongate in shape).

Additional differences from *O. chevreuxi* are the presence of dorsal spinules on the ramus of uropod 3, and the shape of the coxal plates 2 to 4.

Orchestia guancha Stock & Boxshall, 1989

O. guancha Stock & Boxshall, 1989 : 46-48, figs. 1-5.
"*O. chevreuxi*" (non de Guerne, 1887); Tenerife records of CHEVREUX, 1888, 1900; DAHL, 1950, ANDERSSON, 1962.

This is an endemic of the mountains in northern and northwestern Tenerife, where it occurs in moist places between 100 and 2000 m a.s.l. It can be distinguished at once from all

other Macaronesian talitrids by its large body size (up to 21 mm) and the morphology of the propodus of gnathopod 2 (♂) : the palma possesses a deep emargination near the opposing tip of the claw, and the claw itself is pointed (not obtuse) and is not drawn out into a narrow distal part. Detailed illustrations of this species can be found in the publications of CHEVREUX (1900), ANDERSSON (1962), and STOCK & BOXSHALL (1989).

A rapid identification key to the 4 Macaronesian taxa of terrestrial *Orchestia* is presented below. Each taxon is endemic to a single island or groups of islands.

1a — Basis of gnathopod 1 (♂, ♀) with proximo-anterior row of bristles on median surface .. 2
b — Without row of bristles in that position 3
2a — Claw of gnathopod 2 (♂) gradually tapering, distally sharply pointed; palma of gnathopod 2 (♂) with deep emargination near palmar corner. Postero-ventral lobe of basis of pereiopod 7 (♂, ♀) strongly overhanging ..... *O. guancha* (Tenerife)
b — Claw of gnathopod 2 (♂) with narrowly drawn out, obtuse tip; palma (♂) with very shallow emargination near palmar corner. Lobe of basis of P7 (♂, ♀) not strongly overhanging .... *O. gomeri* (La Gomera)
3a — Coxal gill of pereiopods 3, 4, and 6 longer than basis (♂, ♀). Propodus of pereiopod 7 (♂, ♀) ca. 1.25 times as long as carpus. Ischium of gnathopod 2 (♂) L-shaped ..... *O. canariensis* (Gran Canaria)
b — Coxal gill of pereiopods 3, 4, and 6 shorter than basis (♂, ♀). Propodus of pereiopod 7 (♂, ♀) more than 1.5 times as long as carpus. Ischium of gnathopod 2 (♂) "normal" ..... *O. chevreuxi* (Azores)

In our opinion, at least *O. canariensis, O. chevreuxi*, and *O. gomeri* form a monophyletic group within the genus *Orchestia*. *O. guancha* might be closer to *O. gammarellus* (Pallas, 1766), living in salty, supralittoral conditions and known from Macaronesia, but unlike *O. gammarellus, O. guancha* lacks strong sexual dimorphism in pereiopod 7.

Note on the occurrence of terrestrial talitrids on the other islands of the Canary archipelago, and on the alledged occurrence of Orchesia chevreuxi *on Fuerteventura.*

CHEVREUX (1900 : 4) records "*O. chevreuxi*" from various islands of the Canary archipelago. Re-examination of his material showed that the specimens recorded from Tenerife belong to *O. guanchia*; those from Gran Canaria belong to *O. canariensis*, whereas a single adult male from Fuerteventura (locality not specified, altitude 200 m), preserved in the Muséum national d'Histoire naturelle, Paris, under cat. nr. Am 4372, belongs to *O. gammarellus*, a common supralittoral species in the Canary Islands. Up to now, no "real" terrestrial talitrid is known from Fuerteventura, and in the light of the semi-arid conditions prevailing on the island, no such taxon is expected either. Similarly, no landhoppers are known from the dry islands Lanzarote, La Graciosa, and Allegranza. More surprisingly, and notwithstanding extensive search, no landhoppers have been found so far on the more humid island of El Hierro.

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